

REMARKS

The Examiner objected to the specification, stating “The disclosure is objected to because of the following informalities: second dielectric layer "155" in para. 23 line 9 should be second dielectric layer -150-; second dielectric layer "255" in para. 27 line 8 should be second dielectric layer -250-; conductive liner "280" in para. 32 line 4 should be conductive liner -275-; first dielectric layer "255", second dielectric layer "245" in para. 33 line 5. should be first dielectric layer -245-, second dielectric layer -250-; illustrated in "FIG. 7B" in para. 48 line 5 should be illustrated in -FIG. 7C-.” In response, Applicants have amended paragraphs, 23, 27, 32, 33 and 48 as the Examiner has suggested.

In view of the Examiner’s earlier restriction requirement, Applicants retain the right to present claims 18-28 in a divisional application.

The Examiner rejected claims 1, 3-8, and 10-16 under 35 U.S.C. 103(a) as being unpatentable over Roche (U.S. Pub. 2005/0048755) in view of Bohr (U.S. Pub 2002/0064929).

The Examiner rejected claims 2, 9 and 17 under 35 U.S.C. 103(a) as being unpatentable over Roche (U.S. Pub. 2005/0048755) in view of Bohr (U.S. Pub 2002/0064929) in further view of Peters (U.S. Pat. 6521530).

Applicants respectfully traverse the §103(a) rejections with the following arguments.

35 USC § 103 Rejections

As to claims 1 and 8, the Examiner states that “Roche [Figs. 1-6] discloses a method, comprising: (a) providing a substrate [52]; (b) forming a passivation layer [54] on a top surface of said substrate; (c) forming an electrically conductive layer [56] on a top surface of said passivation layer; (d) patterning said conductive layer into a plurality of wire bond pads spaced apart [Fig. 3; para. 17], top surfaces of said wire bond pads coplanar [It would be obvious that the bond pad surfaces are coplanar]; and (e) forming a dielectric layer [68] on said top surface of said passivation layer in spaces between adjacent wire bond pads and on said top surfaces of said wire bond pads, said dielectric layer filling said spaces; and (f) removing said dielectric layer from said top surface of said wire bond pads. Roche failed to disclose in (f) wherein said top surface of said dielectric layer in said spaces coplanar with said top surfaces of said wire bond pads. However, Bohr [Figs. 2c-d] discloses removing said dielectric layer [212] from said top surface of said wire bond pads, said top surface of said dielectric layer in said spaces coplanar with said top surfaces of said wire bond pads.”

Applicants contend that claims 1 and 8, as amended, are not obvious in view of Roche in view of Bohr because Roche in view of Bohr does not teach or suggest every feature of claims 1 and 8. In a first example; Roche in view of Bohr does not teach or suggest “top surfaces of said dielectric layer in said spaces coplanar with said top surfaces of said wire bond pads” Applicants respectfully point out that in Bohr Figs. 2d, 2e, 2f, and 2g that dielectric layer 212 is not coplanar with the top surface 222 of wire bond pad 206 but rather is coplanar with a top surface of capping layer 204 formed *on top* of the wire bond pad.

In a second example, neither Roche nor Bohr teaches “completely removing said dielectric layer from said top surfaces of said wire bond pads” as Applicants claims require. In

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Roche FIG. 4, the dielectric layer 68 is still on the top surfaces of pad 56 along the periphery of the pad. . In FIG. 2c of Bohr, dielectric layer 212 is formed on top of a layer 204 on “directly” not on top surface 222 of wire bond pad 206. A layer cannot be removed from a surface if it was never on that surface.

Further, the Examiner stated the reason to modify Roche with Bohr is for the “purpose of providing a planar surface to facilitate the deposit of subsequent layers that are difficult to deposit into high aspect ratio gaps with a desired thickness.” Applicant respectfully point out this is not what Bohr states.

(1) Bohr actually states in paragraph [0006] “it is difficult to deposit a silicon nitride layer into a high aspect ratio gap *to obtain a sufficient hermetic seal.*” The alleged motivation of “*providing a planar surface*” does not originate from prior art but has been supplied by the Examiner. Applicants maintain the rejection is improper because there is no suggestion in the prior art to combine the references as required by *Karsten Mfg. Corp. v. Cleveland Gulf Co.*, 242 F.3d 1376, 1385, 58 U.S.P.Q.2d 1286, 1293 (Fed. Cir. 2001) which states “ In holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in the way that would produce the claimed invention.” Therefore, the Examiner has not established his prima facie case of obviousness.

(2) Applicants maintain there is no motivation to combine Roche with Bohr for the reason given by the Examiner because Roche does not teach filling in gaps with any subsequent layers after the dielectric layer has filled the gaps. In fact, there are no gaps in Roche because only a single wire pad is shown.

(3) The Examiner has failed to provide a prima facie case that Roche has high aspect ratio gaps to fill. Again, Roche shows only a single pad. No spacing between wire bond pads is taught in Roche, thus it is impossible to determine an aspect ratio of the gap between pads.

Based on the preceding arguments, Applicants respectfully maintain that claims 1 and 8 are not unpatentable over Roche in view of Bohr and are in condition for allowance. Since claims 2-7, and 29-32 depend from claim 1 and claims 9-17 and 33-36 depend from claim 8, Applicants respectfully maintain that claims 2-7, 9-17 and 29-36 are likewise in condition for allowance.

As to claims 2 and 9, Peters in Fig. 7e does not show “recessing said dielectric layer in said spaces below said top surfaces of said wire bond pads” as the Examiner alleges. Peters in FIG. 7e shows forming a pad on a top surface of a dielectric layer to a metal line embedded in the dielectric layer, the contact made through a via in the dielectric layer. No recessing step has been performed.

As to claims 3 and 10, neither Roche or Bohr teach “recessing said wire bond pads below said top surfaces of said dielectric layer in said spaces after said completely removing said dielectric layer from said top surfaces of said wire bond pads.” Roche teaches etching an opening in a dielectric layer formed over wire bond pad 56 as opposed to recessing the wire bond pad below a dielectric layer whose surface was previously co-planar with that of the wire bond pad as Applicants claim. Bohr “recesses” the pad by forming a hardmask layer 204 on the pad 206 before even forming the dielectric layer 212.

As to claim 17, there is no passivation layer in Peters, only the dielectric layer.

Applicants respectfully remind the Examiner that the passivation layer of claim 17 and the dielectric layer of claim 8 are distinct layers. Peters teaches only a single layer 706 between the pads 710 and wires 704 (see Peters FIGs 7a-7e). Since the Examiner states Peters teaches a recessing the dielectric layer, layer 706 cannot be both the dielectric layer and also be the passivation layer.

CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invite the Examiner to contact the Applicants' representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account 09-0456.

Respectfully submitted,
FOR: Daubenspeck et al.

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